

6. 'Mahadevian': An Oldowan Pebble Culture of India

A. P. KHATRI

I. INTRODUCTORY

The term 'Mahadevian' is applied here to a 'pebble culture' found in a horizon underlying the deposits yielding Chelles-Acheul culture, in the Narmada valley in Central India. The name is derived after the type site, Mahadeo Piparia, situated on the southern bank of the Narmada, about twenty miles northwest of Narsinghpur town, Madhya Pradesh (see map, Fig. 1). This 'Mahadevian' basal culture consists of crudely flaked water-worn pebbles with rough and jagged cutting edges; among these are also specimens which suggest the form and shape of the crudest type of Chellian hand-axes. This would seem to indicate that the horizon containing them is not only Pre-Chellian in time scale but represents also the ancestral stage of the Chelles-Acheul culture of India, identical to Africa. It is suggested that from this 'root culture' has evolved a hand-axe industry from its crudest types to the advanced Acheulian specimens made by wooden-hammer technique. And indeed, the researches in the Narmada valley appear to show that this is actually the case.

This pebble horizon first came to be noticed by the writer, in the field season of 1960, at Hasalpur in Hoshangabad district where chopper-chopping tools were found *in situ* in a cemented pebbly gravel. The writer was working on a Research Programme, 'The Exploration for the Remains of Early Man in India', conducted under the supervision of Dr M. R. Sahni, president of the Palæontological Society of India, and sponsored by the Council of Scientific and Industrial Research, Government of India. The number of specimens were too small to rely upon, but sufficient to give the hint that there could be sites containing this pebble culture where rich collection could be made and solid conclusions derived therefrom. In 1961 two such sites were discovered in Narsinghpur district where stratified material could be obtained. At one place at least pebble tools in different stages of manufacture could be picked up along with incipient hand-axes in a loose gravel. Some true hand-axes were also found in the loose gravel which were much rolled and might have been brought there by the river current from somewhere else.

In this short preliminary note, the first impressions of this lithic-pebble culture are set forth and certain problems posed by its discovery are presented with suggested solutions.

2. STRATIGRAPHY

To make clear the position of the pebble horizon it is essential to present the stratigraphy of the Narmada alluvium at the outset:

a. *Red clay*: The lowest stratum in the Narmada stratigraphy is sticky, reddish clay, 8-9 feet thick, exposed at several localities but very clear at Mahadeo Piparia

and Barmanghat (Narsinghpur district) in the main valley of the Narmada; Devakachhar and Ratikarar on the Sher and at Gadarwara on the Shukkar, both being tributaries of the Narmada. The pebble tools were found *in situ* in this stratum at Mahadeo Piparia and Murgakhera in the Narmada valley.

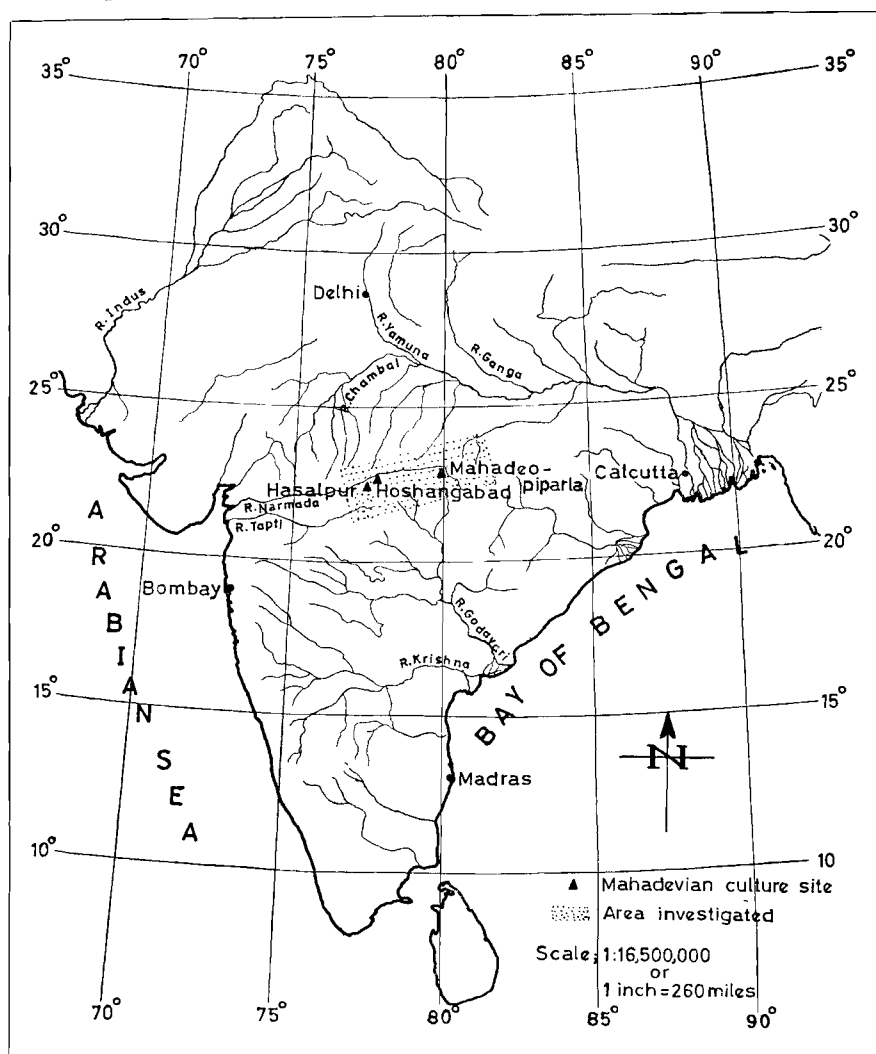


FIG. 1 Mahadevian Culture Site.

b. Cemented pebbly gravel (Gravel I): Against the red clay lies the cemented pebbly gravel exposed extensively at Hasalpur and Kankar Ghat, in Hoshangabad district, and at Mahadeo Piparia, in Narsinghpur district, where it occurs in patches in the main stream. This deposit is found exposed in the bed of the river and is not seen anywhere direct in the stratigraphical sequence either under or overlying any deposit. In the Kankar Ghat deposit the pebble tools were found *in situ*. As there is a lot of lime in the deposit which comes up through capillary action and is

converted into *kunkars*, objects of later ages are also seen superficially embedded in the deposit, and are sufficiently hardened in the deposit to require the use of hammer and chisel for extraction. Careful examination of the whole situation showed that the pebble tools are far more firmly embedded than later objects like recent pottery sherds and pieces of glass bangles. Besides being implementiferous, the deposit contains fossils which are dated to the middle Pleistocene. This pebbly gravel (Gravel I) seems to have been formed at a time when the red clay was being eroded and from that point of view it is later than the red clay. Man continued to manufacture pebble tools in this stage, and that is why tools of the same category are found in both deposits. Though the red clay has not yielded any fossils at Mahadeo Piparia to give any idea of age, near the railway bridge at Hoshangabad the writer recently discovered a huge tusk of *Elephas antiquus* at the junction of the red clay and the overlying deposit. The writer believes that the tools in the red clay are earlier in age than those found in the pebbly gravel and may belong to the early part of the middle Pleistocene.

c. *Cemented sandy gravel* (Gravel II). The red clay was eroded extensively before the next deposit of cemented sand was laid over it. The unconformity between those two deposits can be seen clearly at Devakachhar, Tindni, Ratikarar on the Sher, and at Barmanghat, Sagunghat and Pithera on the Narmada. This gravel (Gravel II) is 6-8 feet thick and occurs about 15-20 feet above the present water level. It contains both fossils and implements. The fossils are sometimes semi-mineralized and the tools belong to the early-middle Acheulian phase.

d. *Yellow sand*: Lying conformably over the cemented sandy gravel (Gravel II) is yellow sand, 25-30 feet thick, deposited in a cross-current, by the sluggishly moving stream. It yields late Acheulian tools of jasper and chert as well as fine-grained red quartzite. This horizon is very rich in mammalian fossils and contains Series II tools—a culture quite different from the handaxe-cleaver complex.

e. *Brown soil*: The yellow sand finally changes to brown and the contents become more and more clayish as one goes up. At the top the whole sequence is capped by the black cotton soil. The brown soil has so far yielded nothing except one semi-fossilized shoulder blade of a large animal(?) from Bandrabhan. In the black cotton soil, microliths of chalcedony and jasper are sometimes met with. Table I presents the Pleistocene stratigraphy and its relationship with the archaeological succession. For a somewhat more detailed discussion of the Pleistocene stratigraphy of the Narmada see Khatri (1961).

3. PEBBLE TOOL SITES

There are four main sites in which pebble tools were found. These are Hasalpur, Kankarghat (Hoshangabad town) in Hoshangabad district, and Mahadeo Piparia and Murgakhera in Narsinghpur district (Madhya Pradesh).

a. *Hasalpur*: It is a site on the southern bank of the Narmada five miles downstream from Hoshangabad town. The pebbly cemented gravel (I) is exposed here in a huge expanse and is 6-8 feet thick. Tools of all types from Chellian to Acheulian and with all degrees of rolling are found on the surface. The pebble tools flaked

crudely to choppers and chopping tools were removed *in situ* from the deposit and were seven in number (Figs. 2*b*, 4*c*). These tools were eroded on the face exposed to flood action but the buried side was found uneroded and fresh. The term *in situ* is applied in the case of those specimens which were embedded very deeply and were extremely hard to remove with hammer and chisel. The superficially embedded pieces are not considered here as *in situ* specimens.

b. Kankar Ghat Hoshangabad town (Plate I). This is an old site mentioned by Theobald in 1860 which yielded him a few fossils. It was visited by de Terra and Teilhard de Chardin in 1935, from where they recovered stone age implements (de Terra and Paterson 1939).

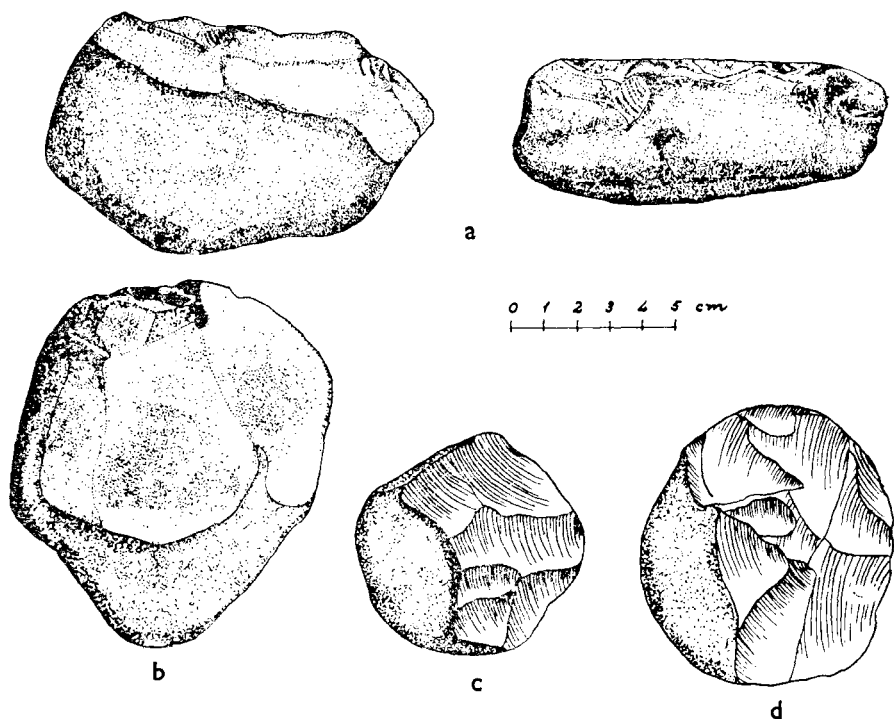


FIG. 2. Choppers

a. On a medium-sized oval pebble, flat on both the sides. The chipping is uni-directional and is confined only to one of the lateral sides. Many 'steps' present. Material: Light brown quartzite; semi-rolled. Found in the Budhni gravels, Hoshangabad. Measurements: $113 \times 80 \times 44$ mm.

b. On a round pebble of medium size. The anterior portion of the upper face exhibits three deep flake scars which make a wavy working-edge at the anterior end. Material: Light brown quartzite; semi-rolled. Found in the Hasalpur gravels. Measurements: $108 \times 103 \times 72$ mm.

c. On a medium-size, flat pebble. One of the lateral sides is steepened by chipping so as to meet the ventral side to make the wavy edge. The opposite side to the working edge is thick and good for gripping. Material: Red quartzite; much rolled. Budhni gravels, Hoshangabad. Measurements: $64 \times 63 \times 42$ mm.

d. On an oval pebble of cricket-ball size. The one face of the pebble is flaked over $2/3$ of its area and the portion along the chipped periphery is steepened so as to form a zig zag edge with the pebbly underface. Material: Fine-grained red quartzite; semi-rolled. Budhni gravels, Hoshangabad. Measurements: $85 \times 74 \times 53$ mm.

It is located on the southern bank of the Narmada, like the previous site, and the pebbly cemented gravel is exposed on a large scale (500 sq.yds). It is situated just below the Hoshangabad Public Works Department headquarters. The pebble tools were found *in situ*, along with flakes, chipped off by block-on-block technique. The number of specimens found *in situ* were 17, and found mostly embedded near the periphery of the deposit towards the stream. The tools when found on the surface are mixed and rolled as is the case when they are superficially embedded (Figs. 2 a, c-d, and 4 a-b).

TABLE I. *Middle and Late Pleistocene Stratigraphy of the Narmada Valley (Central India) and the Archaeological succession. The pluvials were characterized by heavy rains and humid climate; the interpluvials had more or less the present day conditions.*

Period		Geological Formations	Climate	Archæology
Holocene		Black Cotton Soil Yellowish Brown Silt with (V) Concretion	Interpluvial present day conditions	Microlithic
PLEISTOCENE	Upper	Deposition of Cross-bedded Sand (fossils). (IV)	Current sluggish but water level still high PLUVIAL	Late Acheulian and Series II
		Cemented Sandy Conglomerate (fossils). (III)	Water level more than 30 in. higher than the present	Late Chellian to Early Acheulian
	Middle	UNCONFORMITY		
		Boulder Conglomerate (II) (fossils) Red Greasy Clay (I)	Interpluvial present day conditions Humidity continued	Earliest phase of the Chellian found in both deposits 'MAHADEVIAN'
		Laterite (?)	Pluvial	—

c. *Mahadeo Piparia* (Plate II-A). This is the type site of the 'Mahadevian' culture where the specimens were found not only in the basal-most stratum of the Narmada stratigraphy—red clay—but were found in large numbers and without mixture (Figs. 3 c).

The village of Mahadeo Piparia is on the south bank of the Narmada approximately 20 miles northeast of Narsinghpur. The Narmada banks are about 60 feet high at this place and the unconformity between the red clay and the overlying deposit is clearly visible.

d. *Murgakhera* (Plate II-B). This site is about half-a-mile downstream from Mahadeo Piparia. The red clay, yielding pebble tools, continues from Mahadeo Piparia up to this spot. After Murgakhera, tools of this type become rare and the stream is full of water for a mile or two onwards up to Pithera. At Murgakhera, on the right side of the village, a loose gravel covering a large area is exposed after the floods and is very rich in pebble tools. At this site were obtained implements of a large and massive variety from the red clay horizon. In this loose gravel many hand-axes of advanced stages were also collected, but they all were very rolled and

were brought here by the heavy current of the river from somewhere else. Besides finished specimens of the pebble culture (Fig. 3 *a-b*), we also find here pebble flakes and unfinished pebble tools in large number.

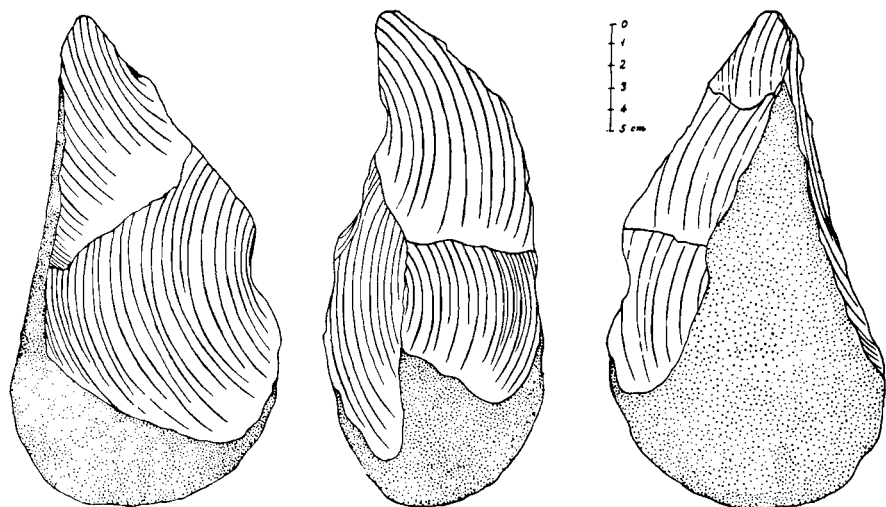


FIG. 3a. Chopping tools

On an elongated, round and heavy pebble with pointed apex and round butt-end. One of the lateral sides is utilized to create a chopping-edge while another one is broad and flat meant for gripping. The edge is sharp, zig-zag, and is a result of alternate flaking. Three broad and deep flakes are removed from the right side and two from the left of the edge. Material: Coarse-grained, red quartzite; not much rolled. Found *in situ* in the red clay horizon at Mahadeo Piparia, Narsinghpur district. Measurements: 238 × 123 × 96 mm.

4. NATURE OF THE INDUSTRY

As said before, the raw material generally selected for making tools was red quartzite pebbles of medium (cricket ball) to huge size (see Fig. 3) of flat, round or oval shapes. Some of the pebbles used for tools are very heavy ranging from 4 to 10 lb. The pebbles were trimmed by block-on-block technique either uni-directionally or bi-directionally by alternate striking to produce an edge which is generally zigzag in case of chopping tools. The flake scars thus produced are large and deep and with a prominent negative bulb of percussion. The typology of tools, in Movius's terminology, consists essentially of choppers and chopping tools. There are certain varieties of chopping tools (Fig. 3) in the collection which are suggestive of an incipient form of *coup-de-poing*. The flakes removed are generally very few—not more than two or three—on either side in the case of chopping tools. Sometimes one long flake along one side is sufficient as in the case of Figure 3c.

5. DISCUSSION

The discovery of pebble tools in the Narmada valley as such, is not new since they have been known to be associated with a handaxe-cleaver complex throughout

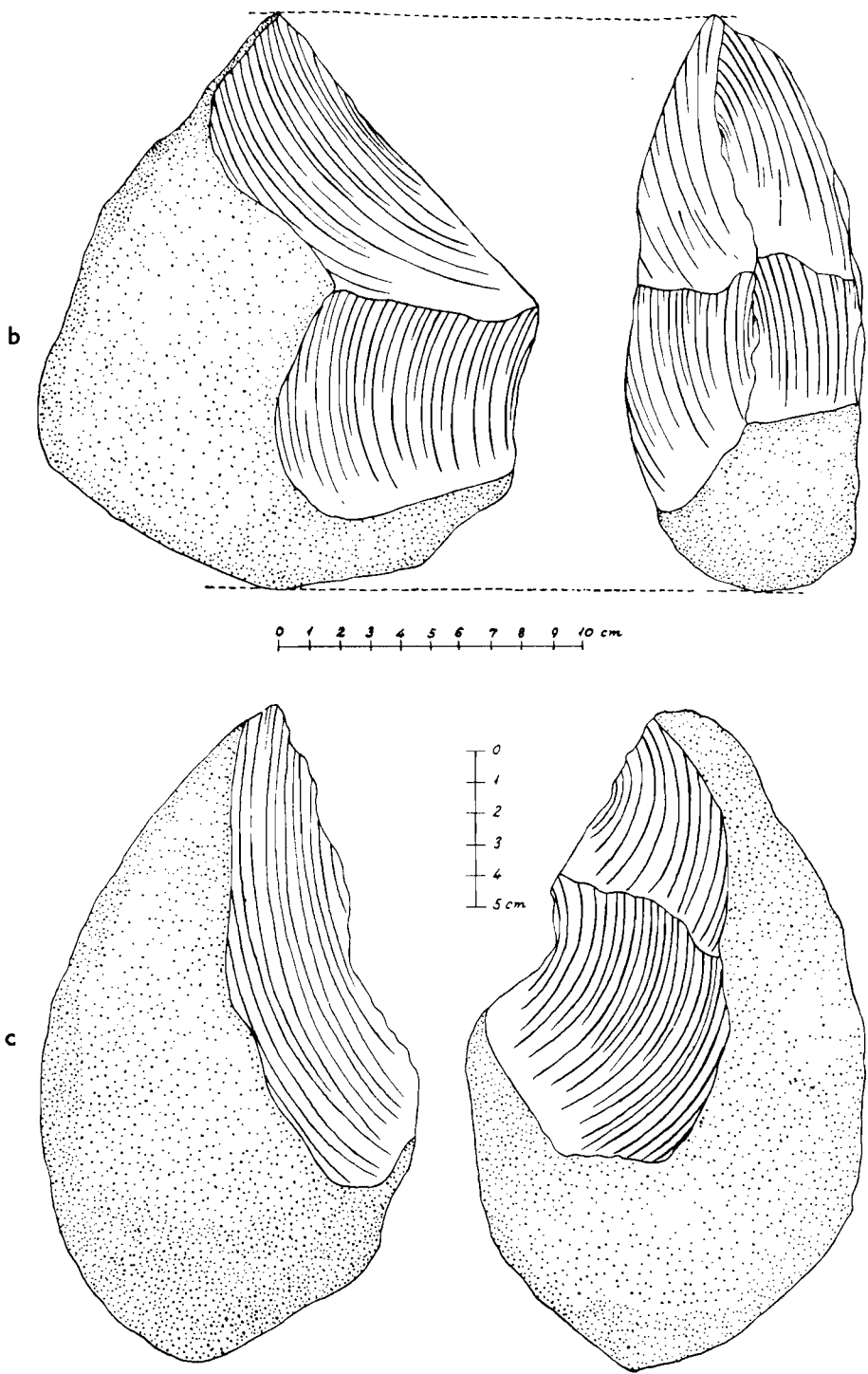


FIG. 3. Chopping tools.

See caption→

Peninsular India for a long time. The thing which is important and unique in the Narmada valley as regards this pebble culture is its occurrence at the base of the evolving Chelles-Acheul culture thereby suggesting the possibility of the origin of the latter culture from it. The case is very similar to East Africa where it has been clearly shown that the handaxe-cleaver complex evolved from the pebble tools belonging to Kafuan and Oldowan types, stage by stage, till Upper Pleistocene times when the late Acheulian folk produced fine specimens by soft-hammer technique. In the Narmada, too, we find the climax of the Indian Chelles-Acheul culture in beautiful hand-axes of advanced Acheulian of jasper and chert, besides fine quartzite in the upper Pleistocene. If we compare the pebble tools from the red clay horizon of the Narmada river in Central India with the Oldoway Gorge sequence, we find that they match well in typology with the specimens coming from the lowest level of the second bed.

Now the question is that if the Chelles-Acheul culture developed from the basal pebble culture in India—as it seems to be from the Narmada evidences—then in what relationship are the Sohanian pebble tools of the Rawalpindi region in North India, situated in the peri-glacial region, to the Narmada pebble horizon? Are there two independent prehistoric cultures in India: namely, the chopper-chopping complex of the Sohan in the north connected with the Anyathian of Burma and the Choukoutienian of China on the one hand; and the handaxe-cleaver complex of Peninsular India related to Africa and Europe on the other, as supposed before? In the writer's opinion the pebble tools of the Sohan and the Narmada belong to the same category; it is advanced that an independent tradition of pebble tools apart from the hand-axe does not exist in India, whatever be the case in Burma and China. The writer had a chance to see the original collection of the Yale-Cambridge Expedition of 1935 from the Rawalpindi area in the Cambridge University Museum of Archæology and Ethnology, England, and at the Madras Government Museum in India. He has no doubt at all about the similarity of the artifacts of this area and of the Narmada valley; he suspects that the material on which the Sohanian tradition was based has not been interpreted as it should have been, and that the grouping of different elements of the culture is not on very certain grounds. The scheme of the stone-age culture presented by the Yale-Cambridge Expedition seems to be doubtful and does not represent a true picture of the situation. It is felt that it needs drastic revision with more field work in the light of present advances in prehistoric archæology.

FIG. 3. Chopping tools

b. On a broad, triangular-shaped pebble which is flat on both the faces. One of the lateral sides converted into sharp chopping-edge by bi-directional flaking. There are two large and deep flakes from the left side and two from the right with a small third at the bottom. The apex is pointed; the butt side is broad and affords a good grip. Material: Coarse-grained, red quartzite; not much rolled. Found *in situ* in the red clay at Murgakhera, Narsinghpur district. Measurements: 186 × 154 × 74 mm.

c. On a massive, heavy and elongated oval pebble. Bi-directional, alternate flaking converting 2/3rds of one of the lateral sides into a W-shaped, sharp edge. The apex is pointed; the butt is broad and round. There is a long, deep, single flake removed from the left and two from the right. Material: Coarse-grained red quartzite; quite fresh. Found *in situ* in the red clay horizon at Murgakhera, Narsinghpur district. Measurements: 216 × 129 × 94 mm.

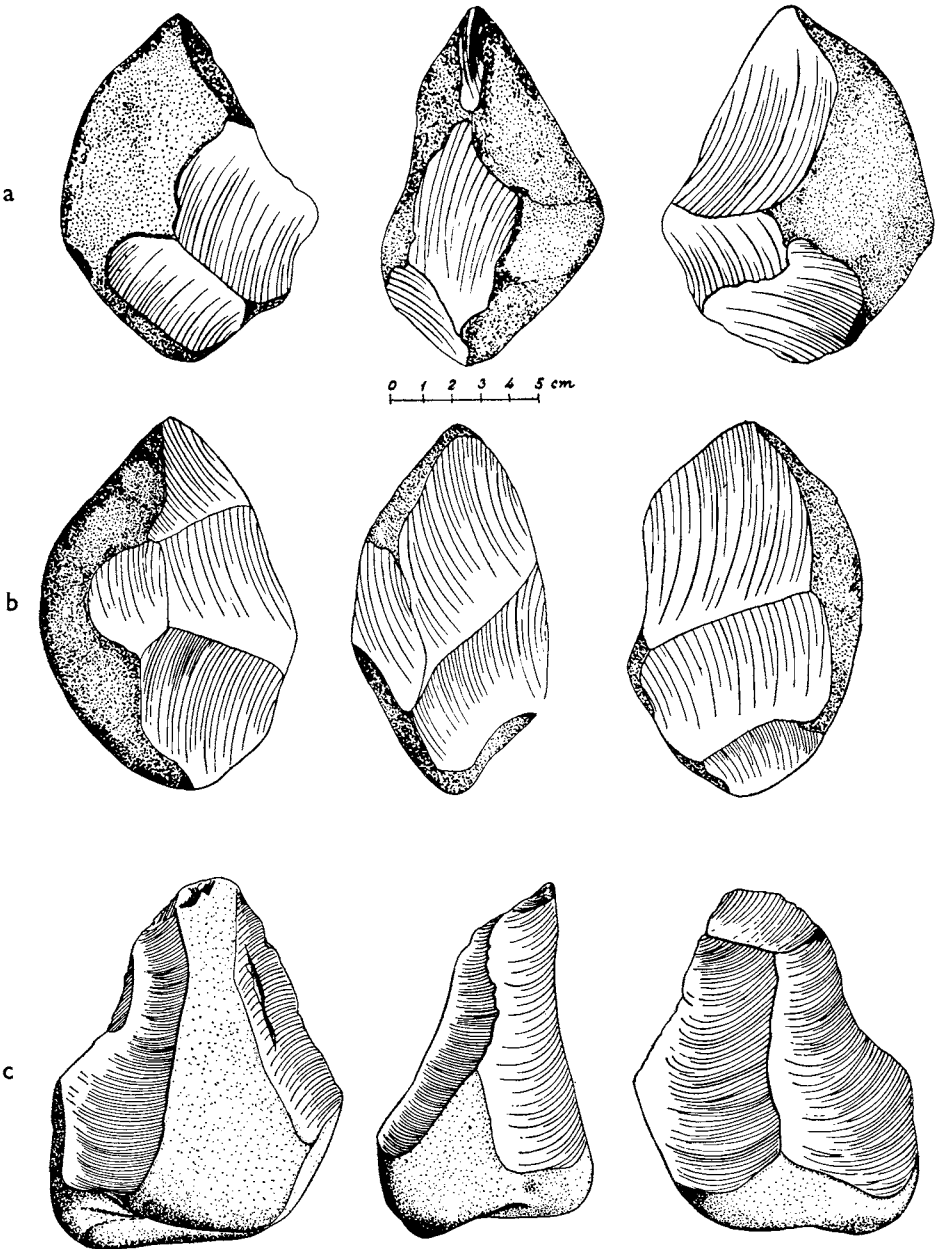


FIG. 4. Chopping tools.

See caption→

The second issue which comes up (if the discovery of the pebble horizon in the Narmada is accepted) is in what way its presence is to be explained in India, taking Central Africa as a cradle of human race as claimed by Leakey (1953), van Riet Lowe (1955) and others? Was there migration from the West—a patent solution of explaining cultural and racial diversification in India so far—or was there an independent and parallel evolution influenced by similar needs? It is not possible to say at the present stage which of the two hypotheses is correct, but if there have been migrations, the answer lies in the investigation of the palæography of the continents involved. Whatever may be the case, it may be asserted that India has an equal claim with Africa, even at the time when explorations in India for Fossil Man are in their infancy. There are two lines of reasoning for this, the same ones which are cited in support of Africa as a cradle of the human race: first, existence of *Dryopithecus*, *Shivapithecus* and *Brahmapithecus* in Lower Pliocene in the Shiwaliks when it was a great centre of mammalian evolution; and secondly, the discovery of the stratified deposits in the Narmada showing evolution of the hand-axe from the pebble stage, covering probably the same range of time. Besides this, the occurrence of Palæolithic tools in the river valleys of Peninsular India in such abundance that a cart-load can be collected in a few hours further strengthens the belief that India, like Africa, played an important part in the development of prehistoric communities.

6. SUMMARY AND CONCLUSIONS

a. In this preliminary note, the proposed 'Pebble Tool Culture' called 'Mahadevian' after its type-site Mahadeo Piparia on the Narmada river in Central India, is reported and discussed; and it has been argued that the pebble components of the Sohanian culture have no independent status but represent the basal industry from which the Indian Chelles-Acheul culture evolved as appears to be the case in the Narmada and other peninsular rivers.

b. The 'Mahadevian Culture' consists of types called chopper-chopping tools in Movius's terminology, and are made on round, flat pebbles which are often huge, heavy and massive.

c. The technique of flaking is 'block-on-block', as a result of which large, deep flake scars are produced.

FIG. 4. Chopping tools

a. On a broad, oval pebble of medium size. The butt is round and the apex pointed. One of the lateral sides converted into a chopping-edge by bi-directional flaking. Material: Red quartzite; much rolled. Budhni gravels, Hoshangabad. Measurements: 121 × 81 × 63 mm.

b. On a round oval pebble of medium size. One of the lateral sides converted into a working-edge by bi-directional flaking, two from the left and one from the right. Material: Light brown quartzite; much rolled. Bhagwara gravels, Hoshangabad. Measurements: 123 × 96 × 59 mm.

c. Pebble tool with round butt and lateral edges converging towards the apex. The upper face shows two long and deep flakes, each on one of the lateral sides. The underface has three deep flake scars covering the whole surface except a small portion at the butt end. Two of these flakes are adjacent to each other with a well-defined border-ridge in between them and a small flake at the top. Material: Light brown quartzite. Found *in situ* in Hasalpur gravels. Measurements: 133 × 106 × 75 mm.

- d. The geologic horizon yielding these pebble tools in the Narmada river valley is a greasy, deep red, clay and the cemented pebbly gravel which is lying against it.
- e. These chopper-chopping pebble tools appear to represent the base from which the Indian Chelles-Acheul culture sprang and evolved stage by stage.
- f. The tools comprising the 'Mahadevian pebble culture' resemble very closely the ones found at the base of the second horizon of the Oldoway Gorge sequence in East Africa.
- g. From the fossil evidences the age of the proposed 'Mahadevian Culture' is probably a very early phase of the Middle Pleistocene.

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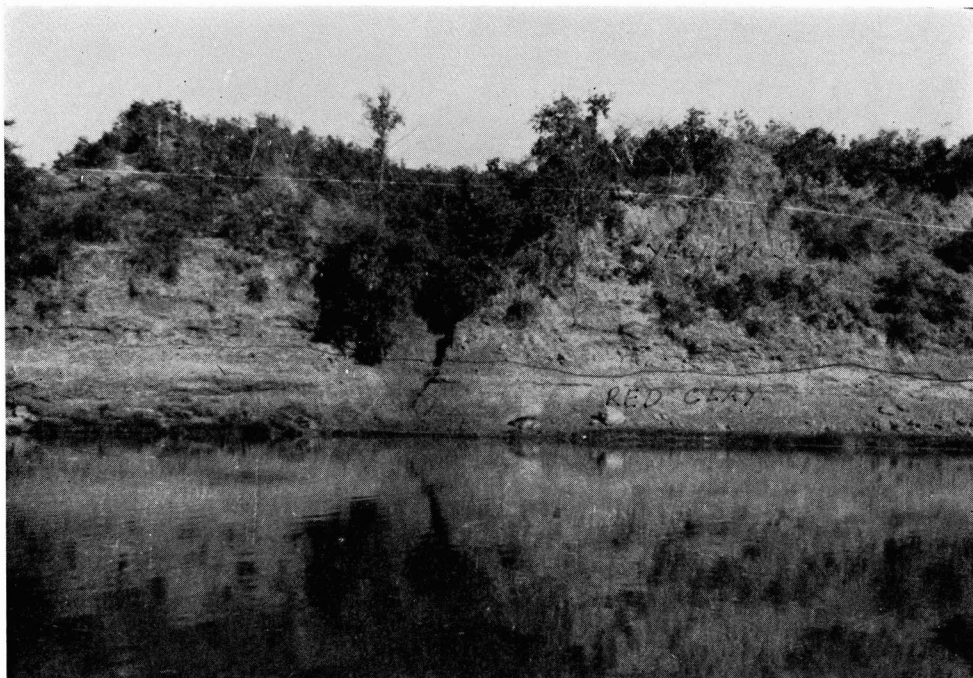
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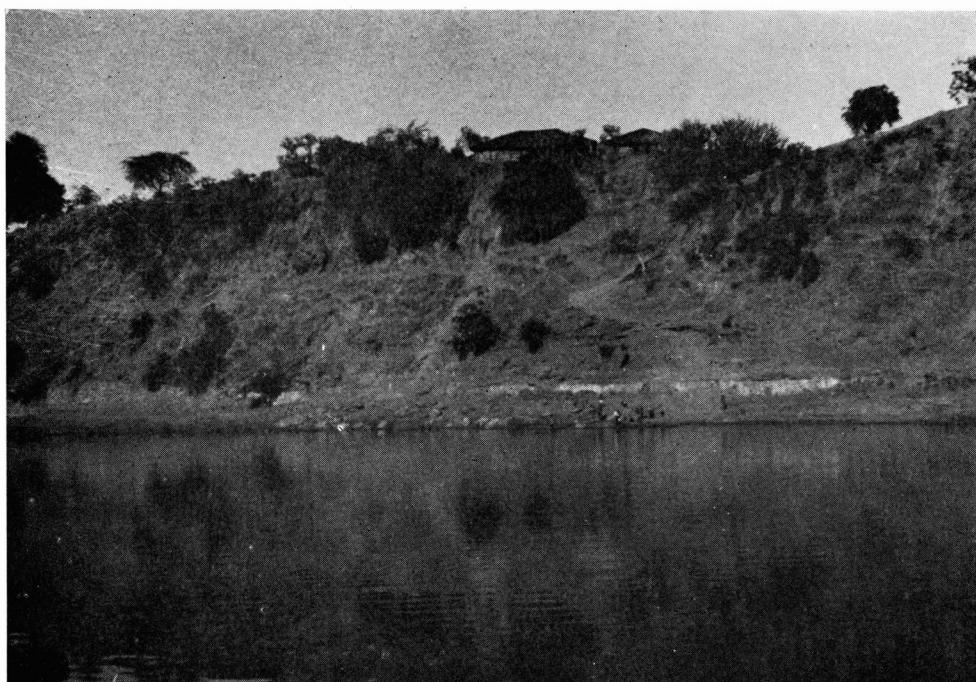
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Kankar Ghat, Hoshangabad. Pebbly conglomerate (Gravel I) is exposed here containing mammalian fossils and chopper-chopping tools belonging to Mahadevian industry. *See page 189.*



Mahadeo Piparia. Right bank of the Narmada showing red clay horizon which contain Mahadevian tools.



The Narmada river bank near Murgakhera, half a mile downstream from Mahadeo Piparia. Narsinghpur district.

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